Appendix C:

Job Physical Exposure Data Collection Instruments

C.1	Position Specific Data Collection Form
	Job Specific Data Collection Form
	Borg CR-10 Scale
	Grip/Pinch Diagram
C.5	Hand Activity Level (HAL) Scale

Appendix C.1: Position Specific Data Form

Position / Worker Specific Data Form

1.	Subject I.D	5.	Fac	ility:						
2.	Subject Name:	6.	Tim	e (2	4hr):					Inight = 00:00>
3.	□Male □Female 4. Age:	7.	Dat	e: _		200000		<2:30 pn	n = 14:30, mic	night = 00:00>
8.	Analyst #1:									
Po	sition Information									
10.	Line / Department Title:									
11.	Position Title:									
12.	Position Description:									
					<u> </u>					
	Typical Shift Start Time (24hr):	17.	М	П	W	Н	□ F	□ S	□ SU	Typical ODD WEEK <check day<="" days="" hours="" td="" total="" worked,="" write=""></check>
14.	Typical Shift <i>End</i> Time (24hr):					_			3	Below>
15.	Break-Time (Minutes/day): Minutes Streaks / Day>		M	П	□ W	П	□ F		SU	Typical EVEN WEEK
16.	# of <i>Distinct</i> Jobs Rotated to:			_		_	_	_	_	<check days="" worked,<br="">Write Total Hours/Day Below></check>
18.	Note Unusual Schedule Here:									

19. Jobs Included in Position:

Job #	Line/Cell/ Workstation	Job Title/ Description	PACE <u>S</u> elf, <u>L</u> ine, <u>P</u> iece Rate	Cycle Time (seconds)	Production per Hour	Typical Work Hrs/Day OR % of Day
1			S L P			
2			S L P			
3			S L P			
4			S L P			
5			S L P			
6			S L P			
7			S L P			
8			S L P			

Subject ID:					
Worker Inf	AS AN OR THE TOTAL PROPERTY OF THE STATE OF		Marsonia de de 🐷		
	rk Experience; Back Maximum of 10 Years OR M It Position and significantly different prior positions with pres				
Position	Title / Description			Years	Average Borg Rating
Current					
Prior #1					
Prior #2					
Prior #3					
Prior #4					
Prior #5					
21. Do you c	currently work on a second job outside of this facil	ity? Ye:	s No		
22. If Yes, 2 ⁿ	d Job Title/Description:				
23. Average	Hours/Week on 2 nd Job: 24. Numbe	r of Years	on 2 nd Jo	ob:	
25. Dominan	t Hand Overall (Average) Borg Rating for 2 nd Job				
26. Worker's	Dominant Hand L R B (if Both, Test Right)	Trial #1	Trial #2	Trial #3	Average
27. Worker's	Maximum <i>Grip</i> Strength (Dominant Hand, #2 Position)	kgf	kgf	kgf	kgf
28. Worker's	Maximum Lateral Pinch Strength (Dominant Hand)	kgf	kgf	kgf	kgf
29. Worker's	Maximum 3-Point Pinch Strength (Dominant Hand)	kgf	kgf	kgf	kgf
30. Standard	lized Grip Force ² (10 kgf) (Dominant Hand, Borg CR-10)		Borg CR-10		
		Rating	Estimated (Stress) ant Hand)	Beg/Er	Rating @ nd (Stress) nant Hand)
31. Overall V	Vorker Rating at Beginning of Shift ³ (Borg CR-10)				
32. Overall V	Vorker Rating at <i>End</i> of Shift ³ (Borg CR-10)				
33. Analyst N	Notes (Optional):				
-					
1. 					
(
	2				

Appendix C.2: Job Specific Data Collection Form

	Job S	Spe	cific	Dat	a Fo	<u>orm</u>						
1.	Subject I.D		5.	Fac	ility: _							
	Analyst Name(s):		6.	Tim	e (24l	nr):		<2:30 pm = 1	14:20 midnish	st = 00:00>		
3.	Cycle Time (minutes:seconds):		7.	Dat	e:			<2:30 pm =	14:30, midnigi	it = 00:00>		
	Job ID (Plant Official):									9"):		
	b Overview				. (,	/		
	Task Borg CR-10 Estimated Ratings	S (To As	sist with V	'ideo A	nalysis)	*		0.00				
_	T.15									nalyst B Rating	org	
18	rsk Task D	escrip	otion							Right (F	orce)	
	1								,	J		
:	2											
,	3											
	4											
	5											
	leo Observation (Remind worker: "I rect Observation (Worker Remains)			ir hand	ds & ar	ms.")_						
_				Left	Hand	l		3	Right I	land		
10.	Average Hand/Arm Vibration Exposit		Neg.	Vis	ible	Seve	re	Neg.	Visibl	e Se	vere	
	(Circle Level(s) if Present, Indicate % of Cy Time for EACH Level)	cle	%		%		_%	%		%	%	
			Lef	t Har	nd			R	ight Ha	and		
		□ <i>N</i> (i	-		□ Tig	ght		VONE /inyl .atex	9	□ Tigh	nt	
11.	11. Gloves (Indicate Type & Fit for <i>BOTH</i> Hands)		otton pless ut-Resis nti-Vibra eather	tion		ormal		Cotton Tipless Cut Res Anti-Vib Leather	□ Nor			
			ther		□ Lo	Other		□ Loo	se			
12.	Room Temperature:°C	+	Left Hand						Right Hand			
13.	Hand Contact with Hot/Cold Objects (Indicate Temperature, % of Cycle	Gle	°C □ <i>Not Applicable</i> Gloves: □ Yes □ No Glo						°C □ <i>Not Applicable</i> Bloves: □ Yes □ No			

Job #____-1

_% of Cycle in Contact

_% of Cycle in Contact

Form #: 12082003

Job # (From "Personal Data Form, Field #19"):

14. Localized Mechanical Compression (Determine Severity on Site):

	Ф			Left		<u>e</u>		Right				
	Negligible	Mode / Sev	erate vere	Exer %	Neglilgible	Mode / Se	erate vere		rtions/cycle of Cycle			
a. Palm		М	S	Ex/Cycle:	% of Cycle:		М	S	Ex/Cycle:	% of Cycle:		
b. Wrist		М	S	Ex/Cycle:	% of Cycle:		М	S	Ex/Cycle:	% of Cycle:		
c. Forearm		М	S	Ex/Cycle:	% of Cycle:		М	S	Ex/Cycle:	% of Cycle:		
d. Elbow		М	S	Ex/Cycle:	% of Cycle:		М	S	Ex/Cycle:	% of Cycle:		
e. Finger(s)		М	S	Ex/Cycle:	% of Cycle:		М	S	Ex/Cycle:	% of Cycle:		

Worker Ratings (Final Interaction with Worker for this Job)

15. Hand / Wrist / Forearm / Elbow Force Measures:

Variables	Not Applicable	Typical Expo	Proc. (90%) 1550 (1541)	Typica Expo	l Peak sure
	App	Left	Right	Left	Right
a. Weight of Workpiece(s) or tool(s) <kg> (supported by worker)</kg>		kg	kg	kg	kg
b. Center of Mass Offset, <inches> (Measure from Center of Grip)</inches>		in	in	in	in
c. Matching Grip Force ⁴ , <kgf> (Dominant Hand Only)</kgf>		kgf	kgf	kgf	kgf
d. Matching Pinch Force⁵, <kgf> Typical Pinch Type: □ Lateral, □ 2-Point, □ 3-Point</kgf>		kgf	kgf	kgf	kgf
e. Matching Thrust Force ⁶ , <kgf></kgf>		kgf	kgf	kgf	kgf
f. Pushing Force, <kgf> (Analyst Measured)</kgf>		kgf	kgf	kgf	kgf
g. Pulling Force, <kgf> (Analyst Measured)</kgf>		kgf	kgf	kgf	kgf
h. Analyst Rating of Applied Force ^{7,*} (Borg CR-10, Entire Job)		CR-10	CR-10	CR-10	CR-10
i. Worker Rating of Applied Force ^{7,*} (Borg CR-10, Entire Job)		CR-10	CR-10	CR-10	CR-10

^{*} Typical Stress Level Across **ALL** Sub-Tasks for **One** Cycle

Job #_____-2 Form #: 12082003

Subject I.D.	Job # (From "Personal Data Form, Field #19"):

Analysis from Video (Performed outside the plant):

16. Tool Kicks and Hand as Hammer:

	gible		eft Each Severity Level	gible		ght Each Severity Level
	Negligible	Moderate (Visible)	Severe	Negligi	Moderate (Visible)	Severe
a. Tool Kicks	Tool Kicks					
b. Hand as Hammer						

	HAL Rating, Hand/W		Typical Exposure %						Typical Exposure Coun (Circle Peak Force Posture							
	Rotations (All Measuren	Le	ft Ha	ind	Rig	ht H	and	Le	ft Ha	ınd	Right Hand					
a.	HAL Rating															
b.	Hand/Wrist Posture (From <i>Anatomical</i> Neutra															
1.	Flexion (Totals 100% of Cycle)	Low <30°	Med 30°-50°	Hi >50°	L	M	Н	L	М	H	L	M	Н	L	M	Н
11.	Extension (Totals 100% of Cycle)	Low <30°	Med 30°-50°	Hi >50°	L	М	Н	L	М	Н	L	М	Н	L	М	Н
Ш	Ulnar Deviation (Totals 100% of Cycle)	Low <10°	Med 10°-25°	Hi >25°	L	М	Н	L	М	Н	L	М	Н	L	M	Н
IV	. Radial Deviation (Totals 100% of Cycle)	Lc </td <td>1575 A</td> <td>Hi :5°</td> <td>L</td> <td></td> <td>H</td> <td>L</td> <td>-8,10-</td> <td>H</td> <td>L</td> <td></td> <td>H</td> <td>L</td> <td></td> <td>H </td>	1575 A	Hi :5°	L		H	L	-8,10-	H	L		H	L		H
C.	Number of Forearm (Measure rotations ≥ ±45°,															

18. Exertions with Elbow Included Angle <70° or >135° crearm rotation during exertion):

	gible			Le	eft			ligible			Riç	ght		
	Negligible		<70°		>135°		Negli		<70°		;	>135	0	
a. Number of Exertions			/ Cycle			/ Cycle			/ Cycle				_ / C	ycle
b. % of Cycle Time				_ %			_ %				_ %			_ %
c. Typical Forearm Position		N	Р	S	N	Р	S		N	Р	S	N	Р	S
(Neutral, Prone, Supine)														

Job #___-3

Subject I.D.	Job # (From "Personal Data Form, Field #19"):

19. Grip & Pinch Exertions for a Typical Cycle (Record % of cycle, and Grip or Pinch Span (≈ inches)):

Type of Green		Left			Right		
Type of Grasp (Indicate: % of Cycle & Grip or Pinch Span)	Negligible	% of Cycle	≈ Grip/Pinch Span*	Negligible	% of Cycle	≈ Grip/Pinch Span*	
a. Power/Hook Grip			inches			inches	
b. Oblique Grip		,	inches			inches	
c. Palmer Grip			inches			inches	
d. Palmer Pinch			inches			inches	
e. 3-Point Pinch			inches			inches	
f. 2-Point Pinch			inches			inches	
g. Lateral (Key) Pinch			inches			inches	
h. 2-Finger "Scissor" Pinch			inches			inches	

Strain Index Analysis from Video:

20. Total Cycle Time = _____Seconds (As Timed at Plant, or From Video)

21. **LEFT** Hand Strain Index Table:

Task	Task Description	Time	Intensity of Exertion (Borg CR-10)	Number of Exertions / Cycle	Hand/Wrist Posture (SI Definition)	Duration of Exertion per Cycle	Speed (SI Definition)	Hours / Day
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Job #____-4

Form #: 12082003

^{*} Approximate actual span from video observation; for spans less than ~¼ inch, put 0 for Grip/Pinch Span.

Subject I.D.	Job # (From "Personal Data Form, Field #19"):
Subject i.D.	JOD # (From Fersonal Data Form, Field #19).

22. RIGHT Hand Strain Index Table:

Task	Task Description	Time	Intensity of Exertion (Borg CR-10)	Number of Exertions / Cycle	Hand/Wrist Posture (SI Definition)	Duration of Exertion per Cycle	Speed (SI Definition)	Hours / Day
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

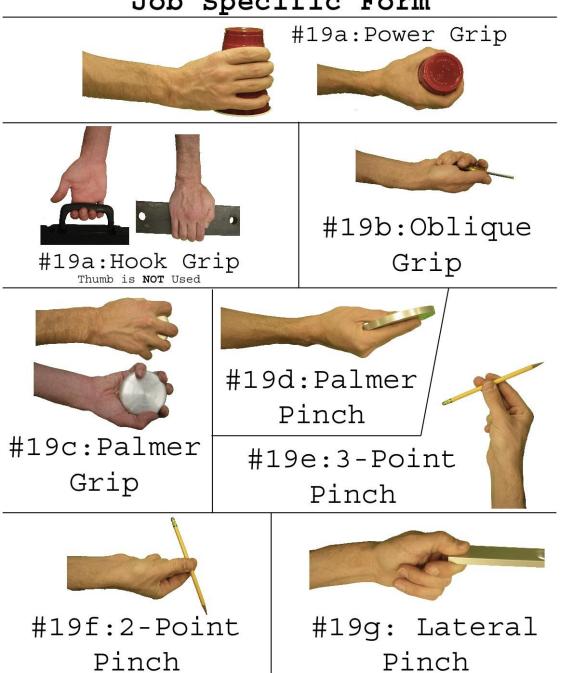
23. Comments & Observations (Risk Factors and Concerns not Otherwise Recorded):

Job #____-5

Borg CR-10

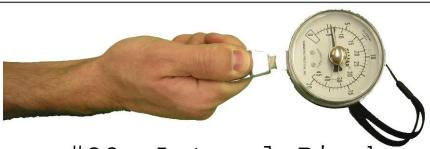
0.5	Very, Very Light
1	Very Light
2	Light
3	Moderate
4	Somewhat Hard
5	Hard
6	
7	Very Hard
8	
9	
10	Near Maximal

Grip & Pinch Exertions Job Specific Form



Grip & Pinch Strength Testing Position Specific Form





#28: Lateral Pinch

Wrist Posture: Functional Neutral Use: Thumb, Side of Index Finger



#29: 3-Point Pinch

Wrist Posture: Functional Neutral Use: Thumb, Index & Middle Fingers

Appendix C.5: Hand Activity Level (HAL) Scale

HAL Scale

